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The following paper was read :—

On the Runn of Cutch, and Neighbouring Region. By Sir H. BARTLE E. FRERE, K.C.B., &c.

[ABSTRACT.]

THE author commenced by defining the region he was about to describe, as a broad belt of country lying between the Indus on the west and the Arivalli Mountains on the east, and extending from the foot of the Himalaya to the Peninsula of Cutch on the Indian Ocean; the length was about 600 miles, and its breadth varied from 100 to 150 miles. The southern portion was formed by the singular tract of country called the Runn of Cutch, which forms a level plain 150 miles in length, lying a little lower than the region around it, and distinguished by the total absence of vegetation. It forms, during the greater part of the year, a plain of firm sand, saturated with salt, on which the hoofs of horses and camels in passing make scarcely any impression. It is so level that a moderate rainfall remains like a vast slop on the surface, and is blown about by the wind until it evaporates. During the south-west monsoon, however, the high tides flow into it and meeting heavy land-floods brought down by the River Loonee, cover it with water to the depth of one or two feet. Travellers and caravans pass over it, but travellers without a guide are sometimes lost, for there are absolutely

no landmarks ; the danger is somewhat lessened on the side of the hills of Cutch by a beacon-fire, which is regularly lighted by a Mohammedan family there settled, to whom has descended the religious duty of thus guiding the wandering traveller over this desolate waste. The surface remains damp even in the driest season, and the soil never pulverises. Mirage and other surprising atmospheric phenomena are common in this singular district. North of the Runn, the desert waterless tract is called the Thurr. The whole region slopes very gradually from the sub-Himalayan ranges, between the Jumna and the Sutlej, towards the south-west. The rivers descending from these lower ranges disappear as they advance into the desert, and none of them reaches the Indus. The Thurr is covered with a constant succession of sandy ridges, rising as high as 200 feet above the valleys, and the aspect of the country is like that of a billowy ocean converted into sand. In districts where rain falls, and where the inhabitants have dug wells, some of which are 300 feet deep, there are cultivation and settlements ; but the soil is throughout sandy, and not a stone can be found, that is not imported, over the whole region. Those parts, chiefly on the eastern and western borders, where a hard level plain exists as a basis whence rise the abrupt sandhills, are called the "Put." Sir Bartle believed that these three native terms of "Runn," "Thurr," and "Put" might be adopted in physical geography, and used in future maps of Cutch and Sind, as denoting varieties of plain which are totally unlike savannah, prairie, steppe, pampa, or any other description of land-surface known in the world. The Thurr presents a great obstacle to communication between the countries lying to the east and west of it. Travellers in attempting to cross it are subject to sudden death, not only from the effects of sunstroke, but from some peculiar condition of the atmosphere connected with the intense heat and the nature of the soil, like sunstroke in effect, but not caused by the sun, as instances are known of the fatal attacks occurring after sunset. The Runn of Cutch and region to the north of it are much subject to volcanic disturbance. The great earthquake of 1819 is still remembered by the inhabitants ; it was described by Sir Alexander (then Lieutenant) Burns, in an admirable paper on the Indus, read before the Royal Geographical Society in 1833, from which Sir Charles Lyell drew most of his facts regarding the geology of this strange region. But a more important feature is the great frequency of slight shocks or tremors, and Sir Bartle was inclined to attribute the singular levelness of the salt-plain of Cutch to these vibrations. During earthquakes, mounds are thrown up, some of which are 10 or 12 miles in length, and of considerable height. These mounds are

formed, Sir Bartle believed, by a crack or fissure of the surface at right angles to the direction of the earthquake wave, one lip of the fissure being tilted up and overlapping the other, so as to form a ridge. Small craters and hillocks of ejected sand are sometimes formed on the surface of the Runn, which afterwards subside again to the level of the plain. Dry beds of rivers are traceable throughout the desert tract to the north. After describing further earthquake phenomena, the climate, productions, and the ruined cities of the Desert and its borders, Sir Bartle gave some very interesting details of the present inhabitants. The Thurr, he said, from the difficulties of access, had been for centuries the place of refuge to remnants of various races and nations who had invaded or succumbed to the fortunes of war in Hindostan. Here are still to be met specimens of the wild Bheels who claim to be the autocthones, and whose blood is essential to ratify every solemn ceremony of the Rajpoot dynasties; Coolies, who are anterior to the earliest Hindoo immigrants; Jats, who are said to be of Scythian origin, and who are hardly ever known to forsake their ancestral occupation as breeders of cattle. Hindoos of every tribe and caste are here found, and many representatives of later immigrations,—Belooches, Afghans, Kurds, Arabs, and even Turcomans. One tribe of Rajpoots in the Desert, the Sodas, retain their primitive custom of bringing up all their female children, and, in consequence, all the chiefs in Rajpootana, where female infanticide had become established, have had for ages to take their wives from the humble Soda settlements. The poor Soda chiefs have, therefore, powerful connexions among their wealthy sons-in-law, and although they often pay a round of visits among them, they are said never to exchange their lives of freedom and simplicity in the desert for the palaces of Rajpootana.

This paper will be printed entire in the 'Journal,' vol. xl.

The PRESIDENT, after thanking Sir Bartle Frere in the name of the Society, said, he always liked to connect geology with geography, and therefore he was pleased that the region around Cutch had been dealt with geologically in the paper. No doubt the formation of the great desert and the Runn had been ascribed to true causes; but these wonderful phenomena of hills, 200 feet or 300 feet high, having been thrown up, and towns destroyed, by earthquakes, were not to be compared with what must have occurred in ancient times, when the sea and the land changed places by hundreds of feet at a time. He would not admit that any number of those smaller movements which have produced changes in modern times could have wrought the great effects of ancient days.

Lord NAPIER said he personally knew how much Sir Bartle Frere's knowledge and love of the people in the Bombay Presidency had enabled him to devise plans for the improvement of the country he had described in the paper.

If those plans had been carried out, a very great change would have been effected on the borders of that desert country.

Mr. GEORGE CAMPBELL said he had a very intimate knowledge of the country between the Jumna and the Sutlej, and took an interest in the lost River Suraswati; for, when he was a young man, he resided on its banks. The situation of the upper part of the river is beyond doubt, but the further course is unknown, and he had hoped that Sir Bartle Frere would have suggested some probable direction which it took. Although the rivers in the district seem very much puzzled where to go, they have no doubt on one point—they all trend towards the Indus, and not towards the Ganges. The River Suraswati itself rises within a mile or two of the basin of the Jumna, and falls into the Kugger, or Gugger, which at present is supplied with water by a canal brought from the Jumna. He took exception to the Jats being termed non-Aryan. He thought that, in feature and in speech, they are evidently Aryan. Almost all the Sikhs are Jats, and a finer-looking people are not to be found in the world. He wished to ask Sir Bartle Frere to what extent he thought it probable that railway or canal communication might eventually be looked for between Scinde and Rajpootana, either from Hyderabad, along the north of the Runn of Cutch to Deesa, and so to Agra, Delhi, or, on the other side, by connecting with Baroda, and so with the rest of India.

Sir BARTLE FRERE, in reply, stated that throughout the whole of the upper part of the desert, and at least as far down as Omurkot, traces are to be found of very large ancient river-beds. One of them comes from Buteana quite in the northern part, and then runs down parallel to, and about 20 miles from the western edge of the desert. It is traceable at different points to a level with Roree. It is apparently continuous, and might very well serve for the course of the Suraswati or the Kugger, if it should be found possible to connect them by leveling, but the general levels of the country are so nearly uniform, that it would require very careful surveying to make out the relative levels of these different river-beds. They are very large and very well marked, and are clearly not ancient beds of the Indus. Further down many other old beds are found, such as the Eastern Narra, which descends from near Roree down past Omurkot, and is traceable as a distinct river-bed to the Runn of Cutch. This has lately had water restored to it by a canal, which has been cut to connect it with the Indus, and an old prophecy has been fulfilled, which used to be in the mouths of the Scindes when it was first talked of—that when the fish of Roree and the lotus shall be found down at Cutch, then a white race will reign in Scinde. He did not know whether the prophecy was invented after the event or not, but it was current at the time when Sir Charles Napier first employed Sir William Baker to survey the course and to draw out the plan of a canal, which has since been carried out. It is quite possible that the Eastern Narra may never have been a bed of the ancient Indus, but may have had its former supply of water from some source to the eastward of the Sutlej. With regard to the Jats, he was fully prepared to allow them to be Scythians, and if Mr. Campbell would define what a Scythian was, he (Sir Bartle Frere) was ready to define what an Aryan meant. He believed it quite possible to run either a canal or railway from Hyderabad either straight across by Omurkot to Balmere, or round the south of the desert towards Deesa, so as to communicate with the system of railways which has been devised for Rajpootana. Of course there are great difficulties owing to the want of fresh water; but if a person started on horseback from Hyderabad, and travelled to Ahmedabad, with the exception of the step of a few feet down to the Runn of Cutch and the step out again, he would find nothing to vary the visible elevation; and in such a country of course anything like railway or canal construction is peculiarly easy. The question is merely one of fresh water, and, considering what has been done in this respect in connection with the Suez Canal, he could not see

any insuperable difficulty in overcoming the want of fresh water in the Desert of Turr.

The PRESIDENT said, when Sir Charles Napier won his great victory at Meeanee he sent Major Vickery from the edge of the Runn of Cutch across to the great chain of mountains, and he returned with a collection of fossils, which, for the first time, showed clearly the true structure of that prolongation of the Suliman range.

Seventh Meeting, 28th February, 1870.

SIR RODERICK I. MURCHISON, BART., K.C.B., PRESIDENT, in the Chair.

PRESENTATIONS.—*James Nisbet Robertson, Esq.*; *Arthur Laing, Esq.*; *F. F. Searle, Esq.*; *John Markham, Esq.*

ELECTIONS.—*Donald Butler, Esq.*, M.D.; *Commander G. M. Balfour*, R.N.; *William A. Morgan Browne, Esq.*; *William L. Barclay, Esq.*, B.A.; *Francis W. Buxton, Esq.*, B.A.; *E. F. Chapman, Esq.*, Lieutenant R.A.; *Colonel Dudley Carleton*; *R. Harvey Hilliard, Esq.*, M.D.; *R. Alexander Hankay, Esq.*; *William Morris James, Esq.*; *Colonel Charles E. Law*; *The Hon. Henry Littleton*; *John Markham, Esq.* (H.M. Consul at Chifu); *William Colpoys Midwinter, Esq.*; *Major-Gen. W. C. McLeod*, (Madras Army); *Lieut.-Colonel George W. Raiks*; *The Right Hon. Sir John Rose*; *W. Anthony Whyte, Esq.*

ACCESSIONS TO THE LIBRARY FROM 14TH TO 28TH FEBRUARY.—
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 ‘The Denver Pacific Railway.’ By T. Collinson and W. A. Bell. Donors, the authors. ‘Memoir sur le Tacuy de Barros.’ By W. D. Cooley. Paris, 1869. Donor, the author. ‘Path of the Total Phase of the Solar Eclipse, December 21-22, 1870.’ By J. R. Hind.
 ‘South Australia Illustrated.’ 1847. By G. F. Angas. ‘New Zealanders.’ 1847. By the same author. Purchased. ‘Mexico in 1861. By C. Lempriere. Purchased. ‘South Australia, 1848.’ By G. B. Wilkinson. Purchased. ‘Village Life in Egypt.’ By B. St. John. 1852. ‘Travels in China, &c., 1853.’ By W. Tyrone Power. ‘Sardinia in 1849.’ By J. W. Tyndale. Purchased. ‘Six Years in India.’ 1854. By Mrs. C. Mackenzie. ‘Trade and Travel in the Far East.’ 1846. By G. F. Davidson. Purchased. ‘Afghanistan.’ 1842. By J. Atkinson. Purchased.

The following paper was read by the author:—

A Visit to Yarkand and Kashgar. By R. B. SHAW, F.R.G.S.

[EXTRACTS.]

THE common idea of Tartary is, I think, that of a vast succession of plains, over which hordes of barbarians wander at will with their